APPARATUS AND METHOD USING HASHING FOR EFFICIENTLY IMPLEMENTING AN IP LOOKUP SOLUTION IN HARDWARE

ABSTRACT OF THE DISCLOSURE

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Internet Protocol address prefixes are hashed into hash tables allocated memory blocks on demand after collisions occur for both a first hash and a single rehash. The number of memory blocks allocated to each hash table is limited, with additional prefixes handled by an overflow content addressable memory. Each hash table contains only prefixes of a particular length, with different hash tables containing prefixes of different lengths. Only a subset of possible prefix lengths are accommodated by the hash tables, with a remainder of prefixes handled by the content addressable memory or a similar alternate address lookup facility.